



## PATENT ABSTRACTS OF JAPAN

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(21) Application number: **59069804**(22) Date of filing: **07.04.1984**(71) Applicant: **SUMITOMO ELECTRIC IND LTD**(72) Inventor: **YAMABAYASHI NAOYUKI****(54) LED FOR OPTICAL COMMUNICATION****(57) Abstract:**

**PURPOSE:** To simplify structure and assembly, and to compact the titled LED by positioning one focus of an elliptical mirror fitted on a beam extracting surface at a light-emitting section, crossing a straight line tying two focuses at right angles with a mirror surface and mounting a lens for shaping parallel luminous flux to an opening at the central section of the mirror.

**CONSTITUTION:** An elliptical mirror 11 is positioned to an LED element, and the length of the major axis and minor axis of an ellipse are selected properly. Beams emitted from a light-emitting section 2 project into air from an LED element 1, are reflected by the elliptical mirror 1 and enter into the LED element again, are reflected from a mirror surface 13 and project from the LED element again, and are condensed to approximately the central section of the elliptical mirror 11. Consequently, parallel luminous flux 23 having a diam-

eter smaller than the core diameter of an optical fiber 3 can be formed easily by a small lens 19 for shaping parallel luminous flux fitted at the position of the central section. Accordingly, a condensing system can be assembled only by integrally forming the elliptical mirror 11 and lenses 19, 21 and fitting the elliptical mirror onto the LED element.

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